

IN THE CLAIMS

Claim 1 (Previously Presented): A magnetizing device for a superconductor, comprising:

a superconductor;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor; and

position modification means capable of modifying the relative positional relationships between the superconductor and the pair of coils.

Claim 2 (Canceled).

Claim 3 (Original): The magnetizing device for superconductor according to Claim 1, wherein the superconductor is a high temperature superconductor arranged on a rotating plate.

Claim 4 (Canceled).

Claim 5 (Previously Presented): A superconducting synchronous machine comprising:

a superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, with respect to the superconductor cooled down to or below the critical

temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor; and

a mode changeover switch for performing a changeover between a magnetic field generation mode and an alternating current supply mode.

Claim 6 (Previously Presented): A superconducting synchronous machine comprising:

a superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

a prime mover for rotationally driving the disk with the superconductor provided thereon; and

a mode changeover switch for performing a changeover between a magnetic field generation mode and a power generation mode.

Claim 7 (Previously Presented): A superconducting synchronous machine comprising:

a superconductor arranged on a disk;

a coolant chamber configured to cool the superconductor down to or below a critical temperature at which the transition to a superconducting state occurs;

magnetic field generating means that generates a magnetic field equal to or higher than a critical magnetic field in which the intrusion of a magnetic flux into the superconductor starts, with respect to the superconductor cooled down to or below the critical temperature at which the transition to the superconducting state occurs, in a state where there are provided an opposing pair of coils arranged on fixed sides with respect to the superconductor, the opposing pair of coils being disposed so as to sandwich the superconductor, and the pair of coils are formed as spiral coils that generate a conical-shaped magnetic field distribution therebetween, each facing a surface of the superconductor;

an alternating current power source for supplying the magnetic field generating means with a current for driving the superconductor;

a prime mover for rotationally driving the disk with the superconductor provided thereon; and

a mode changeover switch for performing a changeover among a magnetic field generation mode, an alternating current supply mode, and a power generation mode.

Claim 8 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, further comprising:

a sensor for detecting the strength of a magnetic field of the superconductor to thereby control the magnetization of the superconductor.

Claims 9 and 10 (Canceled).

Claim 11 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the number of pairs of armature coils is an integral multiple of three; and wherein the number of the superconductors is an integral multiple of two.

Claim 12 (Original): The superconducting synchronous machine according to Claim 5, 6, or 7, wherein the superconductor is a high temperature superconductor.

Claim 13 (Canceled).